Board Decision Document
March 11, 2003

This material has been prepared in response to the request the Board made during the public meeting on January 31, 2003, that the specific issues in this rulemaking be presented separately for consideration by the Board.

This material includes:

Decision tables, Pages 2, 3 and 4.

The first table outlines five general rulemaking decisions before the Board and provides a space for each member to indicate his or her position. The elements being considered are; basing discharge limits on a flow based analysis, adopting nondegradation policy based on the narrative standards concept, requiring mandatory department nondegradation review, adopting new water body classification for CBM ponds and including a nonseverability clause.

The next two tables outline the specific numeric standards for EC and SAR and provides a space for each member to indicate his or her position. The tables are divided between the irrigation and non-irrigation seasons and identify for each major water body the range of EC and SAR values that are within the scope of rulemaking. For each water quality standard space is provided to list a maximum value or "instantaneous" standard. The department recommended values are included in these tables.

Notes for the decision tables, Pages 5, 6, 7, 8. The response to comments contain additional information.

Table showing some of the standards that have been suggested, Page 9.

APPENDIX 1 INCLUDES:

Figures showing percentile, flows, ECs, and SARs for the major streams in the basin.

Tables showing the data used to develop the percentile figures.

The department welcomes comments, questions and suggestions.

Rulemaking decisions before the Board (notes are attached)

General Rules

Adopt the flow based Rule subsection

Board decision	YES	NO

Adopt the nondegradation nonsignificance Rule subsection as proposed in MAR 171

Board decision	YES	NO	Initiate rulemaking for a different method

Adopt the mandatory significance determination Rule subsection

Board decision	YES	NO

Adopt the new classification for CBM discharge water ponds and the associated water quality standards.

Board decision	YES	NO

Adopt the nonseverability Rule subsection

Board decision	YES	NO

Rulemaking decisions before the Board (notes are attached)

Specific Rules which will apply to individual waters

	Powder River	Little Powder River	Tongue River	Rosebud Creek	All Tributaries
IRRIGATION SEASON (2 March - 31 October)					
Electrical Conductivity					
Scope of rulemaking range	1,000 - 2,500	1,000 - 2,500	750 - 2,000	1,000 - 2,500	350 - 2,500
Department recommendations	2,000	2,000	1,000	1,000	500
Board selected values for monthly average standards					
Adopt "no sample shall exceed" or "maximum"standards					**YES NO**
Department recommendations	2,500	2,500	1500	1500	500
Board selected values for "maximum" standards					
Sodium Adsorption Ratio					
Scope of rulemaking range	0.5 - 10.0	0.5 - 10.0	0.5 - 10.0	0.5 - 10.0	0.5 - 10.0
Department recommendations	5.0	5.0	3.5	3.5	5.0
Board selected values for monthly average standards					
Adopt "no sample shall exceed" or "maximum"standards					**YES NO**
Department recommendations	7.5	7.5	5.25	5.25	5.0
Board selected values for "maximum" standards					

Rulemaking decisions before the Board (notes are attached)

Specific Rules which will apply to individual waters

NON-IRRIGATION SEASON (1 November - 1 March)

Electrical Conductivity

	Powder River	Little Powder River	Tongue River	Rosebud Creek	All Tributaries
Scope of rulemaking range	1,000 - 2,500	1,000 - 2,500	1,000 - 2,500	1,000 - 2,500	500 - 2,500
Department recommendations	2,500	2,500	2,000	2,000	500
Board selected values for monthly average standards					
Adopt "no sample shall exceed" or "maximum standards					**YES NO**
Department recommendations	2500	2500	2500	2500	500
Board selected values for "maximum" standards					

Sodium Adsorption Ratio

Scope of rulemaking range	0.5 - 10.0	0.5 - 10.0	0.5 - 10.0	0.5 - 10.0	0.5 - 10.0
Department recommendations	7.5	7.5	5.0	5.0	5.0
Board selected values for monthly average standards					
Adopt "no sample shall exceed" or "maximum"standards					**YES NO**
Department recommendations	10	10	7.5	7.5	5.0
Board selected values for "maximum" standards					

Adopt the Tongue River irrigation season standards for the Tongue River Reservoir for the entire year.	**YES NO**

Notes
On The Rulemaking Decisions Before The Board

These notes and considerations are based on rule notices 17-171 and 17-187. Rule notice 17-170, the Irrigators Petition , and rule notice 17-172, the DEQ alternative which included allocation of assimilative capacity, expire on February 28, which is before the BER expects to act. Thus, any features in those rules, which are not included in rules 17-171 and 17-187, are beyond the scope of this rule making and cannot be adopted during this rulemaking process.

In addition to giving the rationale for the DEQ recommendations this paper will also address some of the comments that were received on the amended rule.

ADOPTING MONTHLY AVERAGE STANDARDS ONLY, OR ADOPTING BOTH MONTHLY AVERAGE STANDARDS AND MAXIMUM STANDARDS

Several commenters have pointed out that if the standards are based on average monthly values then the maximum values are not limited and the maximum values could be high enough to cause damage to water uses. The department has pointed out that this cannot occur as a result of permitted discharges. Discharge limits are based on a mass or volume of discharge per day. If the instream flow today is double the flow used as a basis for developing the discharge limits the discharger could not increase the mass or volume of the discharge today. Similarly, if a discharger does not discharge today the discharger could not "make up for it" by discharging twice as much tomorrow.

Nevertheless, adopting maximum or not to exceed values in addition to average monthly standards would somewhat simplify the development of discharge limits, would reassure the public, and would limit the maximum values to levels that would not cause immediate harm. In order to be within the scope of rulemaking these standards could <u>not</u> be set at values exceeding the maximum values given in the "scope of rulemaking ranges" in the attached sheet titled "Rulemaking decisions before the Board". The maximum values that would prevent immediate harm and that are within the scope of rulemaking are listed in the "Rulemaking decisions before the Board".

ADOPTING THE FLOW BASED SUBSECTION

The rationale for this subsection is to encourage the department to depart from its customary usage of the 7Q10 (the lowest flow for 7 consecutive days that is expected to occur once in every 10 years) as the basis for permit discharge limitations. As an example: There is a request to discharge to the Tongue River above the Reservoir. The department first determines that the 7Q10 flow is 39 cubic feet per second (cfs). The department then calculates, using the quality of

the discharge and the quality of the river and the 7Q10, the maximum rate of discharge that will not violate any standard or significance threshold when the flow equals or exceeds 39 cfs. This discharge rate of flow cannot be exceeded regardless of the rate of instream flow. Ninety percent of the time in June the flow exceeds 380 cfs. Thus, during June 90 % of the time the discharge rate could be about ten times the permit limit (based on the 7Q10) without violating any standard or significance threshold.

The department now has the authority to use values greater than the 7Q10 but has done so in only two cases. In one of these cases the parameter of concern was color and in the other it was nutrients. The department has some flexibility in applying greater values in implementing the mandatory significance determination, which is another element of this rulemaking. If CBM discharges are eventually returned to permitting under the MPDES program, some constraints may exist in the use of values greater than the 7Q10. The reason for these constraints is that the standards for toxic substances have been developed on the assumption that the standards will be violated only when the instream flows are less that the 7Q10. This happens infrequently. If dilution values greater than the 7Q10 are used, the department will need to work closely with EPA to insure that use of the greater values is still protective.

ADOPTING FLOW BASED STANDARDS FOR USE ONLY DURING THE NONIRRIGATION SEASON

A comment recommended limiting flow-based standards to the non-irrigation season. The basis for this is that the use of the more conservative 7Q10 is more protective of agricultural uses during the irrigation season and that the risks of mistakes in developing and complying with flow-based standards would have less serious consequences than during the irrigation season. However, because the flows are usually so low during the nonirrigation season very little water could be discharged regardless of what flows are used to calculate discharge limits. Thus, adoption of flow based standards for use only during the nonirrigation season would serve little purpose.

ADOPTING THE TONGUE RIVER IRRIGATION SEASON STANDARDS AS YEAR AROUND STANDARDS FOR THE TONGUE RIVER RESERVOIR

Several comments expressed concerns about elevated ECs and SARs in the reservoir during the nonirrigation season. The department of Fish Wildlife and Parks (FWP) is concerned that ECs above 1500 µS/cm may reduce the abundance of fish-food organisms and the reproductive success of fish if the high ECs occur when the fish are laying their eggs or in the thirty days after the fish have laid their eggs. Of all the fish species present in the entire Powder River Basin only Burbot ("ling") lay their eggs during the nonirrigation season.

Some of the commenters have pointed out that if the water in the reservoir is allowed to reach the proposed nonirrigation season EC or SAR standards then the water that is released from the reservoir at the start of the irrigation season could exceed the irrigation season standards. Permits issued upstream of the reservoir would contain conditions to prevent the violation of irrigation season standards downstream of the reservoir. Nevertheless, the concern about reservoir releases

could be solved by adopting the irrigation season standards for the Tongue River as year around standards for the reservoir. This step would insure that the waters of the reservoir never exceed the levels that are protective of irrigation uses. It would also address FWP's concern about fish-food organisms.

ADOPTING THE NONDEGRADATION NONSIGNIFICANCE THRESHOLD RULE SUBSECTION

In MAR Notice No. 17-171, the rationale for adopting the narrative nonsignificance threshold for the protection of "high quality" waters under Montana's nondegradation policy explained that "both EC and SAR fluctuate naturally in the Tongue River and Powder Rivers to the extent that the proposed numeric standards in New Rule I will often be exceeded." The rationale further explained that, since the Tongue and Powder Rivers are often not "high quality" because they will naturally exceed the proposed numeric standards, adopting the narrative nonsignificance threshold for the protection of beneficial uses is appropriate.

Several comments suggested that the nonsignificance threshold for narrative standards in ARM 17.30.715(1)(g) is appropriate only for parameters for which there are no numerical standards. In cases where the Board has adopted numerical standards, such as the proposed standards for EC and SAR in New Rule IV, then the Board should also adopt numerical nonsignificance thresholds for these parameters. By adopting a number or a percentile threshold, such as 50% of the numerical standard, the Board would prevent degradation up to the numerical standard.

If the Board decides that adopting the nonsignificance threshold applicable only to narrative standards is not appropriate for EC and SAR, then there will be no nonsignificance criteria for EC and SAR after the Board adopts numerical standards for these parameters. In that event, the Board would be required to initiate a new rulemaking proceeding to adopt a numerical nonsignificance threshold for these parameters.

ADOPTING THE MANDATORY SIGNIFICANCE DETERMINATION RULE SUBSECTION

The Board is proposing the adoption of a mandatory "nonsignificance review" for CBM discharges in response to a ruling by a federal district court. The district court held that a permit under Montana's federally delegated NPDES program is not required for discharges from CBM development. In order to ensure that the State's water quality standards and nondegration requirements are met, the Board is proposing a mandatory "nonsignificance review" for these unpermitted discharges.

One comment suggested that the Board should not adopt this approach until the Ninth Circuit rules on the permit issue. If the district court is reversed, then the DEQ would have authority to require an MPDES permit for CBM discharges. On the other hand, if the Ninth Circuit upholds the lower district court and the Board has not adopted the mandatory nonsignificance review, then the Department would have no regulatory mechanism in place to ensure that CBM discharges meet applicable water quality standards and nondegradation requirements.

ADOPTING THE NEW CLASSIFICATION AND STANDARDS FOR CBM PONDS

Water brought to the surface during the development of Coal Bed Methane and held in a newly created pond creates a new type of state water. Unlike reservoirs built in a channel for stock water or irrigation purposes, these new ponds contain very little runoff water or precipitation. The holding ponds for groundwater produced during the development of Coal Bed Methane are not built in a channel, ephemeral or otherwise, except for a few ponds constructed in the initial phases of the industry in Montana. The ponds also are not likely to leak or discharge to other surface waters. These manmade state surface waters are unlike any other and the potential beneficial uses of these waters is limited when compared to the general water use classifications that apply, especially when irrigated agriculture is considered.

Because these ponds are unique and for the most part do not exist at this time a new surface water classification with the appropriate supporting water quality standards are needed. The Department proposes in New Rule III of MAR 17-171, a classification designation of G-1 for these waters and the designated beneficial uses include: watering of wildlife and livestock, aquatic life not including fish, secondary contact recreation and marginal suitability for irrigation after treatment or mitigation measures. Secondary contact recreation bacteria standard and a maximum EC standard would apply. The specific standards in Department Circular WQB-7 would not apply.

Adoption of the proposed new classification and standards also conforms with the provisions in MCA 75-5-301, Classification and standards for state waters. This section directs the board to establish a classification for state waters that is in accordance with their present and future most beneficial uses and adopt standards of water quality that give consideration to the economics of waste treatment and prevention. The provisions of MCA 75-5-302, Revised classifications not to lower water quality standards – exception, do not apply because the waters described above are new and have not been classified.

Comparison of proposed monthly EC and SAR standards. (EC values are in µS/cm) DRAFT DRAFT

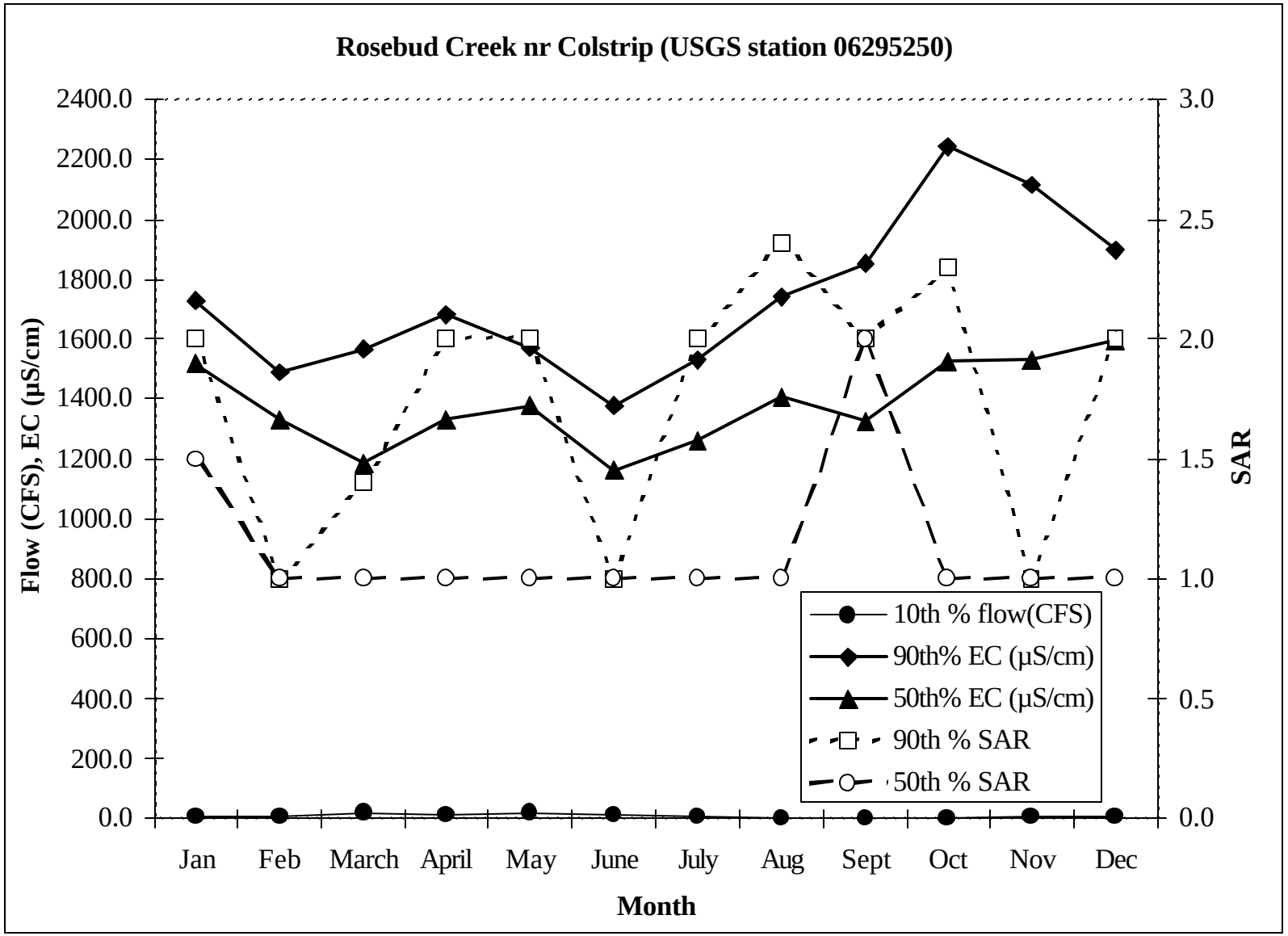
Location, parameter*	New DEQ	Scope of rulemaking	Irrigator's Compromise	Northern Cheyenne	Discussion Draft**
Tongue River mainstem:					
EC irrigation season	1000	750-2500	1000	(South***) 1000	1500
SAR irrigation season	3.5	0.5-10	3.0	(South & Maximum) 2	3.5
EC irrigation season				(North***) 1500	
SAR irrigation season				(North & Maximum) 3	
EC non-irrigation season	2000	1000-2500	1000	(South & Maximum) 2000	2000
SAR non-irrigation season	5.0	0.5-10	3.0	(South & Maximum) 2	5.0
EC non-irrigation season				(North) 2000	
SAR non-irrigation season				(North & Maximum) 3	
Powder and Little Powder River mainstems:					
EC irrigation season	2000	1000-2500	1600		2000
SAR irrigation season	5.0	0.5-10	4.0		6.0
EC non-irrigation season	2500	1000-2500	2500		2500
SAR non-irrigation season	7.5	0.5-10	6.0		7.5
Rosebud Creek mainstem:					
EC irrigation season	1000	1000-2500	1000	(South) 1000	1500
SAR irrigation season	3.5	0.5-10	3.0	(South & Maximum) 2	3.5
EC irrigation season				(North) 1500	
SAR irrigation season				(North & Maximum) 3	
EC non-irrigation season	2000	1000-2500	1000	(South & Maximum) 2000	2000
SAR non-irrigation season	5.0	0.5-10	3.0	(South & Maximum) 2	5.0
EC non-irrigation season				(North) 2000	
SAR non-irrigation season				(North & Maximum) 3	
Tributaries & other surface waters in above basins:					
EC irrigation season	500	350-2500	500	1500	1500-2000
SAR irrigation season	5.0	0.5-10	3.0	(&Maximum) 3	3.5-6.0
EC non-irrigation season	500	500-2500	500	(& Maximum) 2000	2000-2500
SAR non-irrigation season	5.0	0.5-10	3.0	(&Maximum) 3	5.0-7.5
Other Comparisons					
Standards apply to values that are:					
EC	Monthly averages	or Instantaneous	Instantaneous	30 day average during irrigation season, Maximum is instantaneous	Median value calculated for each of 6 flow ranges
SAR	Monthly averages	or Instantaneous	Instantaneous	30 day average during irrigation season, Maximum is instantaneous	Median value calculated for each of 6 flow ranges
Non-degradation thresholds:					
EC	Narrative		Harmfull (50% of std)		Narrative
SAR	Narrative		Harmfull (50% of std)		Narrative
Water in ponds built to hold CBM discharges:					
EC	3000		500		2000-2500
SAR	none		3.0		5.0-7.5
Definitions in rules for:					
EC	Yes		Yes		No
SAR	Yes		Yes		No

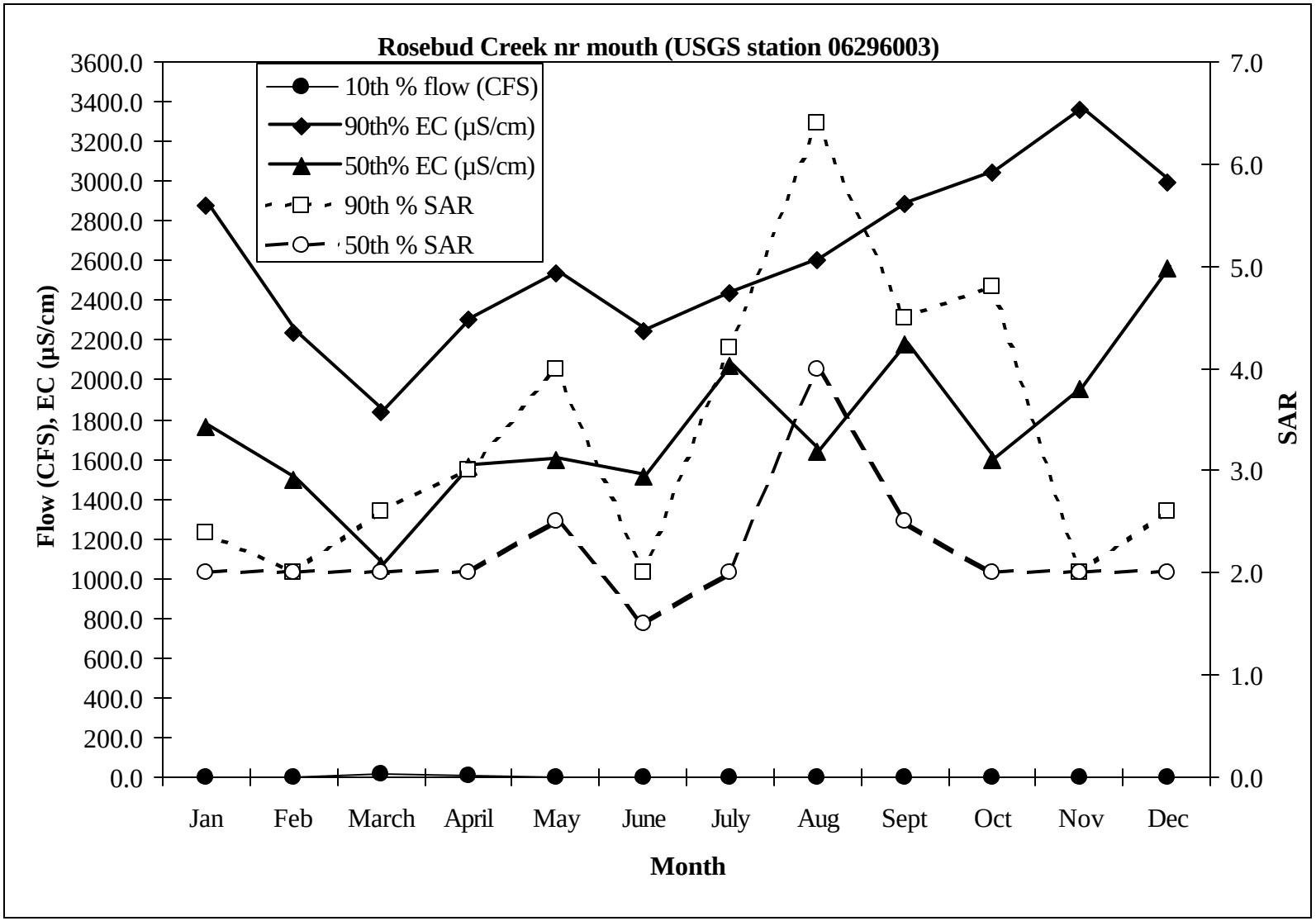
* In all proposals except the Northern Cheyenne the irrigation season is from March 2-Oct 31, non-irrigation from Nov 1 to March 1. The Northern Cheyenne irrigation season is from April 1 to November 15.

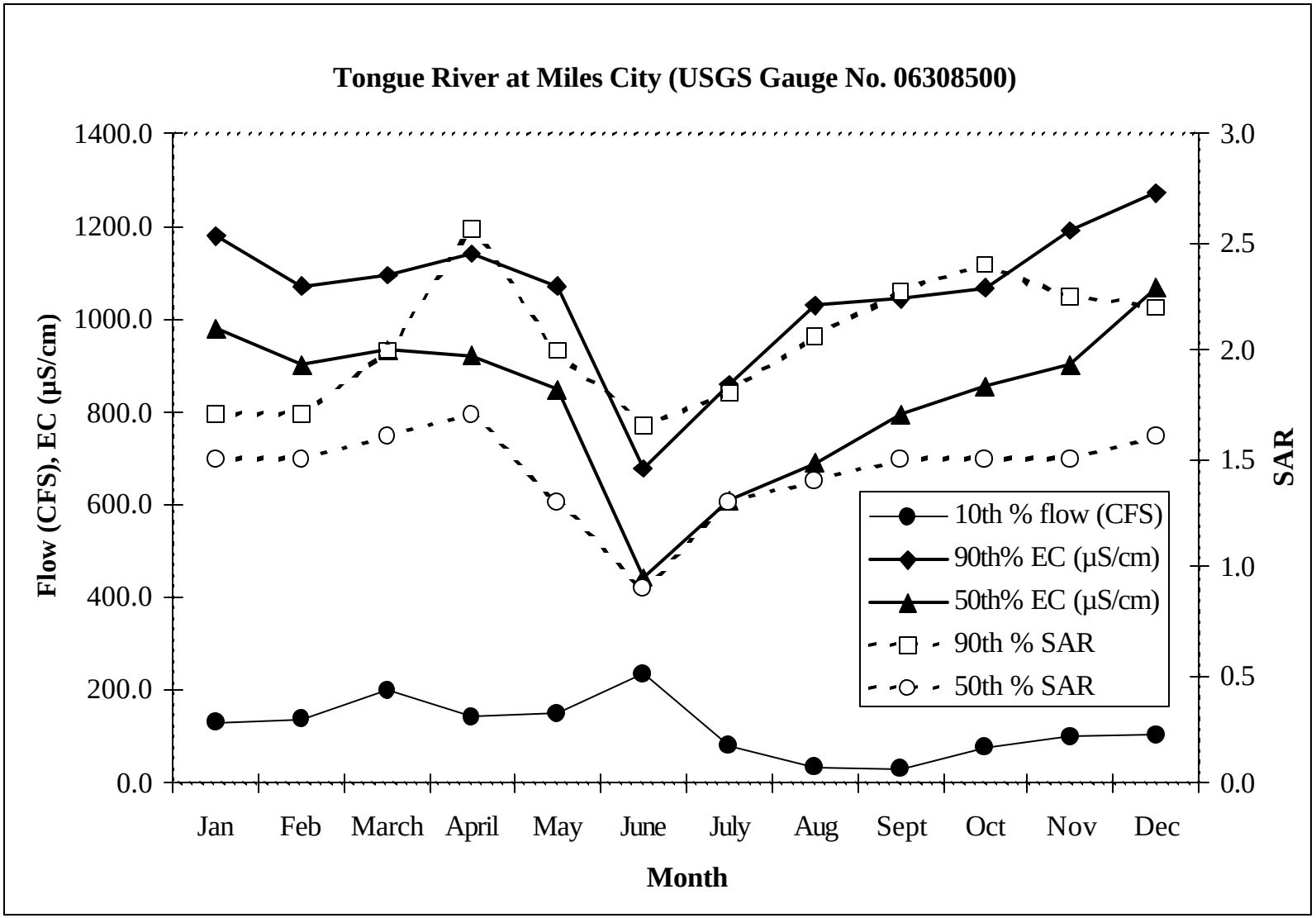
** Presented by industry in a discussion draft - *not* their official position

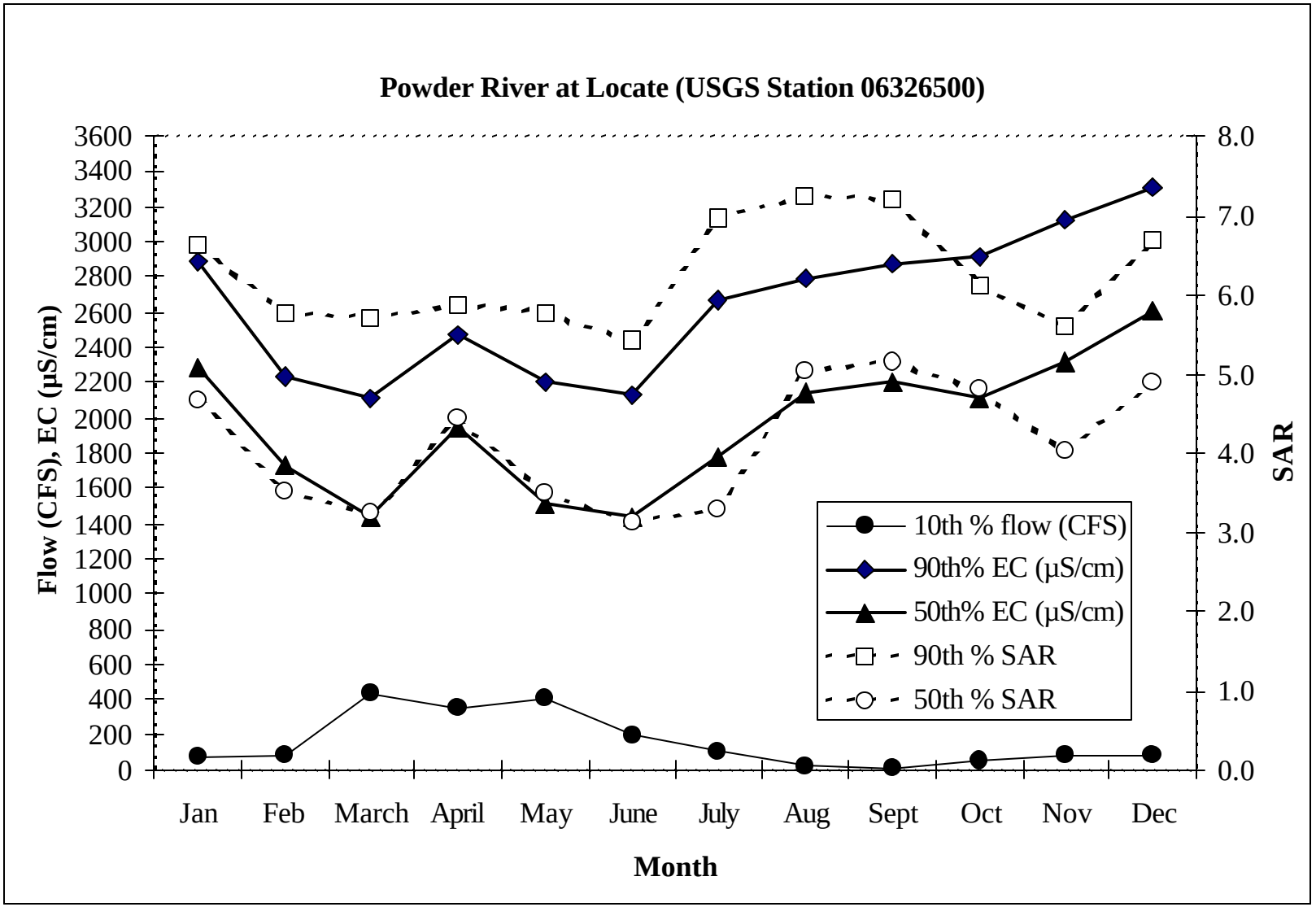
***South and North refer to the Southern and Northern reservation boundries

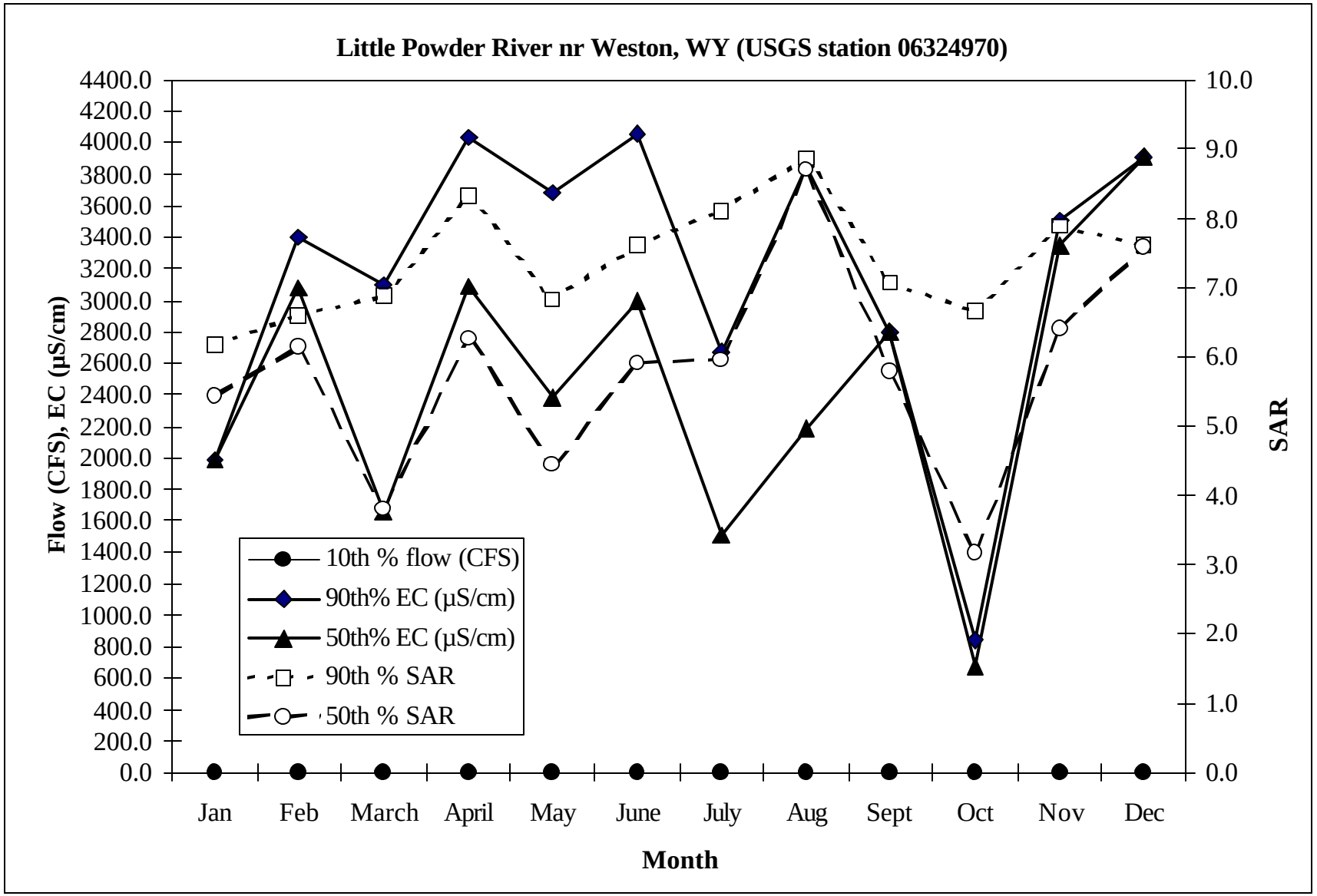
APPENDIX 1.


Rosebud Creek nr Colstrip (USGS station 06295250)
Flow (CFS), EC (µS/cm)
SAR
2400.0
2200.0
2000.0
1800.0
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jan
Feb
March
April
May
June
July
Aug
Sept
Oct
Nov
Dec
Month
10th % flow(CFS)
90th% EC (µS/cm)
50th% EC (µS/cm)
90th % SAR
50th % SAR


Rosebud Creek nr mouth (USGS station 06296003)
10th % flow (CFS)
90th% EC (µS/cm)
50th% EC (µS/cm)
90th % SAR
50th % SAR
Flow (CFS), EC (µS/cm)
SAR
Month
Jan
Feb
March
April
May
June
July
Aug
Sept
Oct
Nov
Dec
3600.0
3400.0
3200.0
3000.0
2800.0
2600.0
2400.0
2200.0
2000.0
1800.0
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0


Tongue River at Miles City (USGS Gauge No. 06308500)
Flow (CFS), EC (µS/cm)
SAR
Month
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jan
Feb
March
April
May
June
July
Aug
Sept
Oct
Nov
Dec
10th % flow (CFS)
90th% EC (µS/cm)
50th% EC (µS/cm)
90th % SAR
50th % SAR


Powder River at Locate (USGS Station 06326500)
Flow (CFS), EC (µS/cm)
SAR
Month
Jan
Feb
March
April
May
June
July
Aug
Sept
Oct
Nov
Dec
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
10th % flow (CFS)
90th% EC (µS/cm)
50th% EC (µS/cm)
90th % SAR
50th % SAR


Little Powder River nr Weston, WY (USGS station 06324970)
Flow (CFS), EC (µS/cm)
SAR
Month
4400.0
4200.0
4000.0
3800.0
3600.0
3400.0
3200.0
3000.0
2800.0
2600.0
2400.0
2200.0
2000.0
1800.0
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jan
Feb
March
April
May
June
July
Aug
Sept
Oct
Nov
Dec
10th % flow (CFS)
90th% EC (µS/cm)
50th% EC (µS/cm)
90th % SAR
50th % SAR

Rosebud Creek nr Colstrip (USGS Station 06295250)

Month	10th % flow(CFS)	90th% EC (µS/cm)	50th% EC (µS/cm)	90th % SAR	50th % SAR
Jan	4.8	1730.0	1520.0	2.0	1.5
Feb	8.0	1490.0	1330.0	1.0	1.0
March	17.0	1565.0	1185.0	1.4	1.0
April	13.2	1680.0	1330.0	2.0	1.0
May	14.8	1568.0	1380.0	2.0	1.0
June	9.0	1380.0	1160.0	1.0	1.0
July	4.9	1530.0	1260.0	2.0	1.0
Aug	0.2	1738.0	1410.0	2.4	1.0
Sept	0.0	1853.0	1325.0	2.0	2.0
Oct	0.3	2240.0	1525.0	2.3	1.0
Nov	3.5	2116.0	1530.0	1.0	1.0
Dec	4.2	1900.0	1595.0	2.0	1.0

Rosebud Creek nr mouth (USGS Station 06296003)

Month	10th % flow (CFS)	90th% EC (µS/cm)	50th% EC (µS/cm)	90th % SAR	50th % SAR
Jan	2.0	2878.0	1760.0	2.4	2.0
Feb	3.3	2237.0	1500.0	2.0	2.0
March	14.8	1835.9	1065.0	2.6	2.0
April	9.8	2300.0	1560.0	3.0	2.0
May	2.9	2538.0	1600.0	4.0	2.5
June	4.0	2245.0	1510.0	2.0	1.5
July	1.1	2440.0	2070.0	4.2	2.0
Aug	0.0	2602.0	1635.0	6.4	4.0
Sept	0.1	2882.0	2180.0	4.5	2.5
Oct	0.2	3040.0	1600.0	4.8	2.0
Nov	0.5	3360.0	1950.0	2.0	2.0
Dec	1.1	2991.0	2560.0	2.6	2.0

Tongue River at Miles City (USGS Station 06308500)

Month	10th % flow (CFS)	90th% EC (µS/cm)	50th% EC (µS/cm)	90th % SAR	50th % SAR
Jan	130.4	1180.0	980.0	1.7	1.5
Feb	139.8	1074.0	901.0	1.7	1.5
March	199.2	1095.0	933.0	2.0	1.6
April	144.0	1140.0	922.5	2.6	1.7
May	148.8	1072.0	848.0	2.0	1.3
June	235.2	679.4	445.0	1.7	0.9
July	79.6	858.4	610.0	1.8	1.3
Aug	35.5	1030.0	692.0	2.1	1.4
Sept	29.8	1043.8	793.0	2.3	1.5
Oct	75.6	1067.0	854.5	2.4	1.5
Nov	99.8	1192.0	902.0	2.2	1.5
Dec	105.4	1273.0	1070.0	2.2	1.6

Powder River at Locate (USGS Station 06326500)

Month	10th % flow (CFS)	90th% EC (µS/cm)	50th% EC (µS/cm)	90th % SAR	50th % SAR
Jan	72	2886	2285	6.6	4.7
Feb	78	2236	1725	5.8	3.5
March	431	2114	1437	5.7	3.2
April	352	2470	1942	5.9	4.4
May	405	2203	1508	5.8	3.5
June	198	2130	1436	5.4	3.1
July	107	2674	1779	7.0	3.3
Aug	20	2788	2142	7.2	5.0
Sept	12	2879	2199	7.2	5.2
Oct	55	2916	2115	6.1	4.8
Nov	78	3126	2314	5.6	4.0
Dec	86	3315	2612	6.7	4.9

Little Powder River nr Weston, WY (USGS Station 06324970)

Month	10th % flow (CFS)	90th% EC (µS/cm)	50th% EC (µS/cm)	90th % SAR	50th % SAR
Jan	0.3	1990.0	1990.0	6.2	5.4
Feb	1.3	3400.0	3080.0	6.6	6.1
March	3.0	3102.0	1650.0	6.9	3.8
April	3.5	4041.0	3085.0	8.3	6.3
May	4.0	3682.0	2385.0	6.8	4.4
June	3.7	4052.0	3000.0	7.6	5.9
July	0.5	2678.0	1510.0	8.1	5.9
Aug	0.0	3850.0	2180.0	8.9	8.7
Sept	0.0	2800.0	2800.0	7.1	5.8
Oct	0.0	838.4	672.0	6.7	3.2
Nov	0.1	3509.0	3345.0	7.9	6.4
Dec	0.6	3910.0	3910.0	7.6	7.6